

A Survey of Distinctive Linguistic Information for Dentists to Reach a Diagnosis as Acute Suppurative Pulpitis-The Difference in Judgements between Beginners and Experts-

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Abstract

Dentists can diagnose most dental diseases using only language information from patients. However, it's possible to get information in the mouth and an X-ray, so there is ambiguity for the basis of linguistic information.

We tried to clarify the necessary linguistic information to diagnose "acute suppurative pulpitis." We investigated whether there was a difference in recognition between novices and experts. And we considered the linguistic information we're getting from the difference between the learning and the clinical experience.

We conducted questionnaire surveys that have 25 linguistic items using the Likert scale "5: A positive diagnosis of acute suppurative pulpitis" to "1: A negative diagnosis of acute suppurative pulpitis." We analyzed statistically whether or not there are differences depending on clinical experience.

As a result of the analysis, information to support a dentist diagnosed with acute suppurative pulpitis is "The pain is throbbing," "I was in pain last night and couldn't sleep," and "There is a hole in the tooth." Information that denied the diagnosis included "There is a fistula on the gums," "My tongue feels numb," "Tooth are buried in the gums," and "My throat is swollen."

Classified into two groups according to clinical experience of dentists, the results of the comparison, respectively, a significant difference was observed in 12 languages of information. Considering this result, the dentist, based on a variety of clinical experience, has found that there is a possibility that the tendency for pattern recognition is increased.

Key Words: Medical interviews; Language information; Diagnosis; Acute suppurative pulpitis; Expertise

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Introduction

Medical interviews aim not only for healthcare providers to unilaterally question patients but also to establish good communication with them. The objective is to diagnose the issues, such as diseases, that patients have through mutual information exchange and to encourage patients' participation in treatment. The process of taking a medical history, which heavily depends on the physician's experience, is becoming standardized with the recent spread of OSCE (Objective Structured Clinical Examination). However, the highly empirical nature of taking medical histories can result in variations in the information gathered, depending on the physician. Education on clinical reasoning, which determines diagnoses, is said to be difficult due to disease specificity and is best learned through case studies using concrete examples [1,2].

In medical interviews, the accuracy rate of diagnoses inferred solely from the narrow sense of medical history taken compared to the final diagnosis is reported to be between 60 and 80%, but such reports are rare. In the dental field, Kurihara et al. showed the

effectiveness of diagnosis through medical history by reporting a correct diagnosis rate of 92.9% in 13 out of 14 cases when judging pericoronitis solely through medical history [3]. However, since these were interviews conducted face-to-face with patients, it is unclear whether the diagnosis was based solely on verbal information, as visual information from the inspection of facial features was also involved.

During medical interviews, dentists are said to hypothesize and consider information while taking into account scientific, conditional, cooperative, narrative, ethical, and practical backgrounds regarding the patient's problems to make a diagnosis and plan treatment [4]. Experienced dentists can reach a diagnosis with a few questions, possessing tacit knowledge that is difficult to express in words or writing. Dentists converse with patients using simple language, extracting necessary information from these conversations, converting it into technical terms in their minds, reasoning, and deducing diagnostic hypotheses. They then select examination methods, such as X-rays, to increase diagnostic certainty. After confirming the diagnosis, they explain the disease

name, progression, and treatment plan in terms understandable to the patient and begin treatment after obtaining consent. They also explain potential conditions that may occur during and after treatment in easy-to-understand terms. Thus, experienced dentists use general and technical terms interchangeably in their minds to gather information, diagnose, and explain it to patients. However, dental students and inexperienced trainee dentists cannot learn how experienced dentists select and use verbal information for diagnosis and treatment explanation just by observing. Therefore, it is considered effective to explicitly share the verbal medical information exchanged between dentists and patients in the early stages of learning. To achieve this, it is necessary to formalize the tacit knowledge of experienced dentists. Although textbooks on diagnostic methods and medical interviews list and categorize verbal information from patients, most are based on experience and case analysis.

We reported that previous studies of acute pericoronitis clarified the differences in the selection of verbal information between experts and novices [5].

This study aims to investigate the diagnostic process of acute suppurative pulpitis, focusing on how dentists sequentially extract and utilize verbal information in clinical reasoning. Additionally, it seeks to clarify the differences in recognition of verbal information from patients between less experienced and experienced dentists, shedding light on the verbal information that dentists acquire through experience.

Subjects and Methods

1. Questionnaire Items

To determine the necessary verbal information for diagnosing painful cases (acute pericoronitis, acute suppurative pulpitis, and acute suppurative apical periodontitis), semi-structured interviews were conducted with three dentists (one with over 10 years of clinical experience, one with over 15 years, and one with over 20 years). The interview content focused on two main areas: 1) questions asked of patients experiencing pain; and 2) the necessary verbal information to diagnose acute pericoronitis, acute suppurative apical periodontitis, and acute suppurative pulpitis.

Based on the interviews, 25 key verbal information items necessary for differential diagnosis of acute pericoronitis, acute suppurative apical periodontitis, and acute suppurative pulpitis were identified, and a multiple-choice questionnaire was created. The questionnaire is shown in Figure 1, 2. It posed the following scenario: "A new patient calls. From the conversation, you suspect 'acute suppurative pulpitis.' What information did you gather that led you to this diagnosis (acute suppurative pulpitis)?" Respondents rated 25 items of verbal information on a five-point Likert scale: "strongly affirm diagnosis: 5," "somewhat affirm diagnosis: 4," "neutral: 3," "somewhat deny diagnosis: 2," "strongly deny diagnosis: 1."

新規の患者から電話がかかってきました。話を伺うと、「急性化膿性歯髄炎」を疑いました。あなたは、どのような情報を得ることで、その診断（急性化膿性歯髄炎）に至りましたか？

①以下の情報の中で、「診断を肯定する：5」、「診断をやや肯定する：4」、「どちらでもない：3」、「診断をやや否定する：2」、「診断を否定する：1」として、○をつけてください。

| | 肯定する | やや肯定する | どちらでもない | やや否定する | 否定する | |
|----|--------------------|--------|---------|--------|------|---|
| 1 | 体温が平熱より1℃以上高い | 1 | 2 | 3 | 4 | 5 |
| 2 | 歯茎が腫れている | 1 | 2 | 3 | 4 | 5 |
| 3 | 口を開けることが辛い | 1 | 2 | 3 | 4 | 5 |
| 4 | 唾を飲み込むと痛い | 1 | 2 | 3 | 4 | 5 |
| 5 | ズキズキと痛む | 1 | 2 | 3 | 4 | 5 |
| 6 | 歯に穴があいている | 1 | 2 | 3 | 4 | 5 |
| 7 | 口の開け閉めをすると痛い | 1 | 2 | 3 | 4 | 5 |
| 8 | どの歯が痛いかわからない | 1 | 2 | 3 | 4 | 5 |
| 9 | 昨夜は痛くて眠れなかった | 1 | 2 | 3 | 4 | 5 |
| 10 | 冷たいもので痛みがひどくなる | 1 | 2 | 3 | 4 | 5 |
| 11 | ものを噛むことができない | 1 | 2 | 3 | 4 | 5 |
| 12 | 喉が腫れている | 1 | 2 | 3 | 4 | 5 |
| 13 | 舌が痺れる | 1 | 2 | 3 | 4 | 5 |
| 14 | 歯茎から血が出ている | 1 | 2 | 3 | 4 | 5 |
| 15 | 歯茎にブツツとしたものができています | 1 | 2 | 3 | 4 | 5 |
| 16 | 歯が埋もれている | 1 | 2 | 3 | 4 | 5 |
| 17 | リンパ節が腫れている | 1 | 2 | 3 | 4 | 5 |
| 18 | 顔（あご）が痛い | 1 | 2 | 3 | 4 | 5 |
| 19 | 以前治療したことがある | 1 | 2 | 3 | 4 | 5 |
| 20 | 痛み止めを飲むと痛みが治まる | 1 | 2 | 3 | 4 | 5 |
| 21 | 熱いもので痛みがひどくなる | 1 | 2 | 3 | 4 | 5 |
| 22 | つめものがはずれた | 1 | 2 | 3 | 4 | 5 |
| 23 | 頭が痛い | 1 | 2 | 3 | 4 | 5 |
| 24 | 冷たいもので痛みが軽くなる | 1 | 2 | 3 | 4 | 5 |
| 25 | 痛み止めを飲んでも痛みが治まらない | 1 | 2 | 3 | 4 | 5 |

②上記25個の情報以外に欲しい情報があれば、ご記入をお願いします。

Figure 1: Questionnaire Form Original Japanese Version.

Dental clinical experience approximately [] years

A new patient calls. From the conversation, you suspect 'acute suppurative pulpitis.' What information did you gather that led you to this diagnosis (acute suppurative pulpitis)?

① Among the following 25 items of linguistic information, "strongly affirm diagnosis: 5", "somewhat affirm diagnosis: 4", "neutral: 3", "somewhat deny diagnosis: 2", "strongly deny diagnosis: 1". Please mark ○.

| Number | Language information | strongly affirm diagnosis | somewhat affirm diagnosis | neutral | somewhat deny diagnosis | strongly deny diagnosis |
|--------|---|---------------------------|---------------------------|---------|-------------------------|-------------------------|
| 1 | Body temperature more than 1°C above normal | 1 | 2 | 3 | 4 | 5 |
| 2 | My gums are swollen | 1 | 2 | 3 | 4 | 5 |
| 3 | It's hard to open my mouth | 1 | 2 | 3 | 4 | 5 |
| 4 | It hurts when I swallow saliva | 1 | 2 | 3 | 4 | 5 |
| 5 | The pain is throbbing | 1 | 2 | 3 | 4 | 5 |
| 6 | There is a hole in my tooth | 1 | 2 | 3 | 4 | 5 |
| 7 | It hurts when I open and close my mouth | 1 | 2 | 3 | 4 | 5 |
| 8 | I can't identify which tooth hurts | 1 | 2 | 3 | 4 | 5 |
| 9 | I was in pain last night and couldn't sleep | 1 | 2 | 3 | 4 | 5 |
| 10 | Cold things make the pain worse | 1 | 2 | 3 | 4 | 5 |
| 11 | I can't chew | 1 | 2 | 3 | 4 | 5 |
| 12 | My throat is swollen | 1 | 2 | 3 | 4 | 5 |
| 13 | My tongue feels numb | 1 | 2 | 3 | 4 | 5 |
| 14 | My gums are bleeding | 1 | 2 | 3 | 4 | 5 |
| 15 | There is a fistula on the gums | 1 | 2 | 3 | 4 | 5 |
| 16 | Tooth are buried in the gums | 1 | 2 | 3 | 4 | 5 |
| 17 | I have swollen lymph nodes | 1 | 2 | 3 | 4 | 5 |
| 18 | I have pain in my face (jaw) | 1 | 2 | 3 | 4 | 5 |
| 19 | I have treated the same tooth before | 1 | 2 | 3 | 4 | 5 |
| 20 | The pain subsided after taking | 1 | 2 | 3 | 4 | 5 |
| 21 | The pain gets worse with hot things | 1 | 2 | 3 | 4 | 5 |
| 22 | Tooth filling came out | 1 | 2 | 3 | 4 | 5 |
| 23 | I have a headache | 1 | 2 | 3 | 4 | 5 |
| 24 | Cold water and food relieve the pain | 1 | 2 | 3 | 4 | 5 |
| 25 | The pain does not go away even after taking painkillers | 1 | 2 | 3 | 4 | 5 |

② If you have any other information that you would like other than the 25 above, please write.

Figure 2: Questionnaire Form.

2. Questionnaire Survey

A questionnaire survey was conducted as follows.

1) Target

The subjects were 259 dentists with at least one year of clinical experience who consented to participate in the research study.

2) Survey period

February 2015 - January 2016

3) Survey method

Dentists with 1 year of clinical experience (dentists in training) were asked to fill out and collect questionnaires on the spot after they were distributed. For dentists with more than 2 years of clinical experience, we mailed the questionnaire along with the request form to the person in charge of the facility who was able to cooperate and whose consent had been explained in advance. After the respondents filled out the questionnaire, the facility staff collected it and returned it in a return envelope.

4) Ethical Considerations

The answer sheets were anonymous, and participants were free to participate or not participate in the study, and even if they consented, they could withdraw their consent midway. Additionally, prior to the study, approval was obtained from the Kyushu Dental University Research Ethics Committee. (Approval number 13-35)

5) Analysis

We digitized the scores given to each of the five items according to the Likert simple method and analyzed those using Python in Google Colaboratory and BellCurve for Excel ver. 2.0.

- **About language information**

The mean value and standard deviation of all respondents were analyzed for the 25 linguistic information items included in the questionnaire.

- **Differences in clinical experience**

Divided into less than 5 years of clinical experience, 5 to less than 10 years of clinical experience, and 10 years or more of clinical experience, dentists with less than 5 years of clinical experience were classified as the "novice group," and dentists with 10 years or more of clinical experience were defined as the "expert group." A statistical study was conducted using the Mann-Whitney U test to determine whether there were differences between the two groups regarding 25 items of linguistic information.

6) Free entry field

We analyzed the information that dentists freely wrote on the questionnaire regarding the information they wanted, in addition to the 25 linguistic information items.

Results

1. Regarding Collection of Questionnaires

Questionnaire forms from 259 people were collected from 9 facilities (faculty of dentistry and a dental university-affiliated hospital). The details are shown in Table 1. Although the questionnaire response rate was 100%, there were some items that were not answered, and the response rate for each item was 98.5% to 99.6%. All collected questionnaires were included in the analysis. There were 106 people in the novice group and 110 in the expert group.

Table 1: Number of Respondents and Clinical Experience.

| Years of clinical experience | Group | Number of respondents |
|-------------------------------------|----------|-----------------------|
| Less than 5 years | [Novice] | 106 |
| Over 5 years and less than 10 years | | 42 |
| Over 10 years | [Expert] | 110 |
| No answer | | 1 |
| Total number of respondents | | 257 |

2. Language Information

Table 2 shows the results for all respondents. Linguistic information with the highest average value is shown in order. There are three items with an average value of 4.0 or higher: "The pain is

throbbing", "I was in pain last night and couldn't sleep," and "There is a hole in my tooth." There were four items with an average value of 2.0 or less, and the lowest were: "There is a fistula on the gums," "My tongue feels numb," "Tooth are buried in the gums," and "My throat is swollen."

Table 2: Linguistic Information Important When Diagnosing Acute Suppurative Pulpitis.

| Item Number | Language information | average | (SD) |
|-------------|---|---------|------|
| 5 | The pain is throbbing | 4.51 | 0.72 |
| 9 | I was in pain last night and couldn't sleep | 4.42 | 0.71 |
| 6 | There is a hole in my tooth | 4.39 | 0.68 |
| 21 | The pain gets worse with hot things | 3.96 | 1.01 |
| 11 | I can't chew | 3.93 | 0.81 |
| 22 | Tooth filling came out | 3.86 | 0.73 |
| 8 | I can't identify which tooth hurts | 3.78 | 1.03 |
| 20 | The pain subsided after taking painkillers | 3.57 | 0.88 |
| 25 | The pain does not go away even after taking painkillers | 3.54 | 0.92 |
| 19 | I have treated the same tooth before | 3.4 | 0.9 |
| 10 | Cold things make the pain worse | 3.34 | 1.22 |
| 24 | Cold water and food relieve the pain | 3.26 | 1.15 |
| 23 | I have a headache | 3.09 | 0.91 |
| 1 | Body temperature more than 1°C above normal | 2.89 | 0.95 |
| 18 | have pain in my face (jaw) have pain in my face (jaw) | 2.59 | 1 |
| 17 | I have swollen lymph nodes | 2.45 | 1.08 |
| 7 | It hurts when I open and close my mouth | 2.43 | 0.84 |
| 3 | It's hard to open my mouth | 2.39 | 0.92 |
| 2 | My gums are swollen | 2.25 | 0.88 |
| 4 | It hurts when I swallow saliva | 2.24 | 0.89 |
| 14 | My gums are bleeding | 2.09 | 0.91 |
| 12 | My throat is swollen | 1.99 | 0.83 |
| 16 | Tooth are buried in the gums | 1.96 | 0.89 |
| 13 | My tongue feels numb | 1.85 | 0.82 |
| 15 | There is a fistula on the gums | 1.81 | 0.83 |

3. Differences in Clinical Experience

Table 3 shows the results of the 25 verbal information items compiled for the two groups: the novice group and the experienced group. The table lists the verbal information items in descending

order of the average values from the experienced group. Among these, 12 items showed significant differences between the two groups, while 13 items did not show significant differences. The graph of the 12 items with significant differences is presented in Figure 3.

Table 3: Comparison of Linguistic Information Related to Acute Suppurative Pulpitis Based On Clinical Experience.

| Item Number | Language information | Novice | Expert | |
|-------------|---|--------|--------|----|
| 5 | The pain is throbbing | 4.29 | 4.66 | ** |
| 9 | I was in pain last night and couldn't sleep | 4.25 | 4.5 | ** |
| 6 | There is a hole in my tooth | 4.21 | 4.48 | ** |
| 11 | I can't chew | 3.7 | 4.04 | ** |
| 21 | The pain gets worse with hot things | 3.85 | 4.03 | |
| 8 | I can't identify which tooth hurts | 3.62 | 3.9 | * |
| 22 | Tooth filling came out | 3.79 | 3.85 | |
| 25 | The pain does not go away even after taking painkillers | 3.28 | 3.66 | ** |
| 20 | The pain subsided after taking painkillers | 3.57 | 3.59 | |
| 19 | I have treated the same tooth before | 3.3 | 3.48 | |
| 24 | Cold water and food relieve the pain | 3.16 | 3.4 | |
| 10 | Cold things make the pain worse | 3.25 | 3.28 | |
| 23 | I have a headache | 2.9 | 3.27 | ** |
| 1 | Body temperature more than 1°C above normal | 3.09 | 2.63 | ** |
| 18 | I have pain in my face (jaw) | 2.56 | 2.59 | |
| 7 | It hurts when I open and close my mouth | 2.48 | 2.33 | |
| 17 | I have swollen lymph nodes | 2.61 | 2.22 | ** |
| 3 | It's hard to open my mouth | 2.54 | 2.17 | ** |
| 2 | My gums are swollen | 2.35 | 2.11 | |
| 4 | It hurts when I swallow saliva | 2.48 | 2.05 | ** |
| 12 | My throat is swollen | 2.1 | 1.91 | |
| 14 | My gums are bleeding | 2.25 | 1.89 | ** |
| 16 | Tooth are buried in the gums | 2.05 | 1.89 | |
| 13 | My tongue feels numb | 1.98 | 1.76 | |
| 15 | There is a fistula on the gums | 1.92 | 1.73 | |

** $p < .01$

* $p < .05$

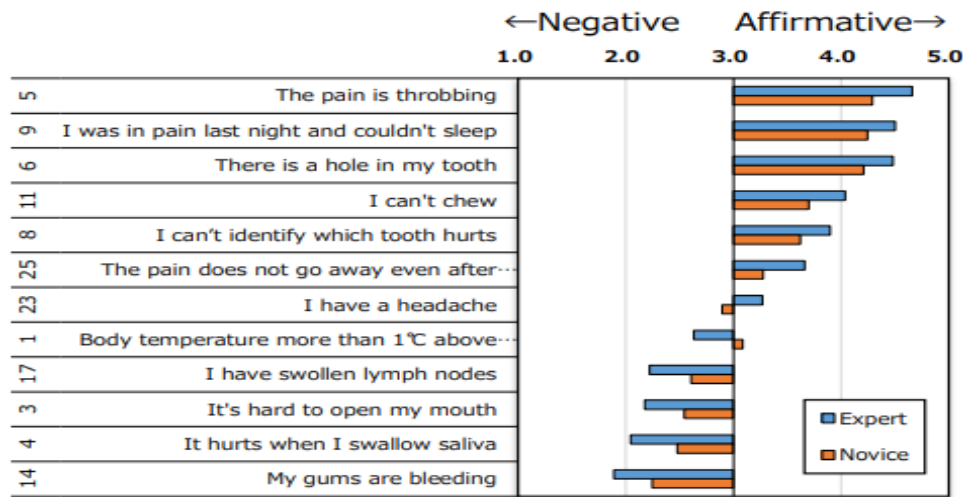


Figure 3: Linguistic Information That Has Significant Differences Depending On the Clinical Experience of Dentists.

Discussion

Table 2 shows that “The pain is throbbing” had an average score of 4.51, indicating that most dentists consider this information to affirm the diagnosis of acute suppurative pulpitis. Additionally, the information “I was in pain last night and couldn't sleep” and “There is a hole in my tooth,” which had average scores above 4.0, are also considered to affirm the diagnosis of acute suppurative pulpitis. In contrast, information such as “There is a fistula on the gums,” “My tongue feels numb,” “My teeth are buried in the gums,” and “My throat is swollen,” which had average scores below 2.0, are considered to negate the diagnosis of acute suppurative pulpitis, suggesting the possibility of other dental conditions.

In examining the differences in clinical experience, the survey responses from dentists with 1 to 40 years of clinical experience were categorized into a “novice group” with less than 5 years of experience and an “expert group” with more than 10 years of experience. While there are not many reports in the literature on the classification of clinical experience years for dentists' expertise, the “10-year rule,” which suggests that it takes 10 years to become an expert in a certain field, has been referenced for the expert group [6,7]. Additionally, references indicating that 5 years is a brief period for clinical experience were used for the novice group [8]. The results in Table 3 and Figure 3 show significant differences between the novice group and the expert group in their perception of verbal information, such as “The pain is throbbing,” “I was in pain last night and couldn't sleep,” “There is a hole in my tooth,” “I can't chew,” “The pain subsided after taking painkillers,” and “I can't identify which tooth hurts.” This indicates that the expert group is more likely to consider this information as affirming the diagnosis compared to the novice group. It can be inferred that clinical experience enhances the recognition of these pieces of information as affirming the diagnosis of acute suppurative

pulpitis. Moreover, the expert group was more likely to consider pain-related information such as “throbbing pain,” “inability to sleep due to pain last night,” “pain persists despite taking painkillers,” and “inability to identify which tooth hurts” as diagnostic. They also considered information on current symptoms or pain triggers, like “a hole in the tooth” and “unable to chew,” to be valuable.

On the other hand, inflammation-related information such as “My gums are bleeding,” “It hurts when I swallow saliva,” “It's hard to open my mouth,” “I have swollen lymph nodes,” and “Body temperature more than 1°C above normal” tended to be seen by the expert group as negating the diagnosis or not affirming it, compared to the novice group. This suggests that such symptoms are indicative of periodontal disease, or pericoronitis, rather than acute suppurative pulpitis. This indicates that, just as with affirming information, the expert group understands and utilizes the importance of negating information, or negative findings, which means recognizing the absence of certain symptoms or signs, in making a diagnosis.

Beyond the 25 verbal information items in the questionnaire, additional desired information included the location of the pain, presence of carious cavities, food impaction, dental prosthesis detachment, changes in symptoms, and duration of pain. When dentists gather pain information from patients, they naturally check the location for further examinations, such as X-rays. Location information in the oral cavity is considered essential for examination and diagnosis. Dentists also recognize that dental prosthesis detachment and food impaction due to carious cavities are indicative of pulpitis. It is likely that they recall the diagnosis and treatment plan based on changes in symptoms and the duration of pain.

From these results, it can be inferred that experienced dentists tend to recognize patterns in verbal information more quickly than

novices, which helps them affirm or negate a diagnosis. In various fields, including general medicine, experienced practitioners are known to develop pattern recognition skills, where clusters of information are identified as indicative of specific diseases and negative findings (absence of certain symptoms) are integrated into the pattern over time [9,10]. The results of this study support these findings from medical practice.

This study compared two groups of dentists: those with less than 5 years of experience (the novice group) and those with more than 10 years of experience (the expert group). Although the literature lacks extensive classification of dentists' expertise by years of clinical experience, the "10-year rule," which suggests it takes about 10 years to become an expert in a field, was referenced for the expert group [6,7]. Literature suggesting that 5 years represents limited treatment experience was used as a reference for the novice group [8].

The survey only included a question about the number of years since obtaining a dental license to measure clinical experience, without considering the frequency of treatments or specific experiences. Therefore, the impact of other factors, such as the number of acute suppurative pulpitis cases encountered, was not accounted for, which remains a topic for future research.

It is not guaranteed that young or novice dentists will learn the necessary diagnostic information solely from experienced dentists. Detailed explanations of how experienced dentists reach a diagnosis are often lacking. Novice dentists may present their cases at case conferences, receive various advice from senior dentists, and become aware of any information they missed. They can then apply this feedback to deepen their information gathering from patients. By reflecting on their daily clinical practice, they can improve their diagnoses and treatment choices for future cases. This suggests that experienced dentists have grown by reflecting on their past experiences and that their pattern recognition in diagnosis has strengthened over time. Experienced dentists can recognize patterns from limited information, remember patterns through repeated scenarios, and extract essential information from various inputs efficiently.

The study revealed differences in the types of verbal information collected for diagnosing acute suppurative pulpitis between novice and experienced dentists. It also suggested that clinical experience leads to more efficient acquisition of verbal information for clinical reasoning. Especially in acute medical interviews, rapid diagnosis is required, necessitating accurate information-gathering skills, which are developed through experience. Demonstrating the characteristics of experienced dentists' diagnostic thinking to clinical students and novice dentists can help clarify the relationship between clinical interviews and foundational knowledge, aiding their learning.

Conclusion

This study aimed to clarify which verbal information supports or negates the diagnosis of acute suppurative pulpitis and to identify any differences in the recognition of verbal information between less experienced and more experienced dentists. The following conclusions were drawn from the results:

Verbal Information Supporting the Diagnosis

Dentists identified "throbbing pain," "inability to sleep due to pain last night," and "a hole in the tooth" as verbal information supporting the diagnosis of acute suppurative pulpitis. Conversely, verbal information that negates the diagnosis includes "a small bump on the gum," "numbness of the tongue," "a buried tooth," and "swelling of the throat."

Comparison Based on Clinical Experience

When comparing two groups of dentists based on clinical experience, the more experienced dentists rated the following verbal information higher than the less experienced dentists: "throbbing pain," "unable to sleep due to pain last night," "a hole in the tooth," "unable to chew," "unable to identify which tooth hurts," "pain does not subside even with painkillers," and "headache." On the other hand, the less experienced dentists gave higher ratings to "bleeding gums," "pain when swallowing," "difficulty opening the mouth," "swollen lymph nodes," and "body temperature more than 1°C above normal."

Pattern Recognition with Experience

The study revealed that with clinical experience, dentists develop specific verbal information recognition skills, indicating a tendency toward pattern recognition in processing verbal information.

Conflict of Interest

The authors declare no conflicts of interest.

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